

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-115 (Cancelled).

116. (New) An isolated protein comprising the sequence of amino acids set forth in Fig. 1A (SEQ ID NO: 1), Fig. 6C (SEQ ID NO: 5), Fig. 6D (SEQ ID NO: 6), Fig. 20C (SEQ ID NO: 28), Fig. 20D (SEQ ID NO: 29), Fig. 26A (SEQ ID NO: 30), Fig. 28B (SEQ ID NO: 33), Fig. 29B (SEQ ID NO: 36), Fig. 30B (SEQ ID NO: 39), Fig. 31B (SEQ ID NO: 42), Fig. 32B (SEQ ID NO: 45), Fig. 33B (SEQ ID NO: 48), Fig. 34B (SEQ ID NO: 51), Fig. 35B (SEQ ID NO: 54), Fig. 36B (SEQ ID NO: 57), Fig. 37B (SEQ ID NO: 60), or Fig. 38B (SEQ ID NO: 63).

117. (New) A nucleic acid comprising a nucleotide sequence that encodes the protein according to claim 116.

118. (New) The nucleic acid according to claim 117 wherein the protein comprises the sequence of amino acids set forth in Fig. 26A (SEQ ID NO: 30), Fig. 28B (SEQ ID NO: 33), Fig. 29B (SEQ ID NO: 36), Fig. 30B (SEQ ID NO: 39), Fig. 31B (SEQ ID NO: 42), Fig. 32B (SEQ ID NO: 45), Fig. 33B (SEQ ID NO: 48), Fig. 34B (SEQ ID NO: 51), Fig. 35B (SEQ ID NO: 54), Fig. 36B (SEQ ID NO: 57), Fig. 37B (SEQ ID NO: 60), or Fig. 38B (SEQ ID NO: 63).

119. (New) The nucleic acid according to claim 118 wherein said nucleic acid comprises the nucleotide sequence set forth in Fig. 26B (SEQ ID NO: 31), Fig. 28C (SEQ ID NO: 34), Fig. 29C (SEQ ID NO: 37), Fig. 30C (SEQ ID NO: 40), Fig. 31C (SEQ ID NO:

43), Fig. 32C (SEQ ID NO: 46), Fig. 33C (SEQ ID NO: 49),
Fig. 34C (SEQ ID NO: 52), Fig. 35C (SEQ ID NO: 55), Fig. 36C
(SEQ ID NO: 58), Fig. 37C (SEQ ID NO: 61), or Fig. 38C (SEQ ID
NO: 64).

120. (New) A nucleic acid comprising a nucleotide sequence
encoding:

CON6 HIV gp160 protein,

subtype C ancestral HIV envelope protein,

subtype C consensus HIV envelope protein,

subtype C consensus HIV gag protein,

subtype C consensus HIV nef protein,

Group M consensus HIV envelope protein,

subtype A consensus HIV envelope protein,

Group M consensus HIV gag protein,

Group M consensus HIV pol protein,

Group M consensus HIV nef protein,

subtype C consensus HIV pol protein,

subtype B consensus HIV gag protein, or

subtype B consensus HIV envelope protein

wherein said nucleotide sequence comprises codons optimized
for expression in human cells.

121. (New) The nucleic acid according to claim 120 wherein said nucleic acid comprises the nucleotide sequence set forth in Fig. 1D (SEQ ID NO: 2), Fig. 6A (SEQ ID NO: 3), Fig. 6B (SEQ ID NO: 4), Fig. 13E (SEQ ID NO: 11), Fig. 13F (SEQ ID NO: 12), Fig. 14B (SEQ ID NO: 14), Fig. 18B (SEQ ID NO: 16), Fig. 19A (SEQ ID NO: 17), Fig. 19B (SEQ ID NO: 18), Fig. 19C (SEQ ID NO: 19), Fig. 19D (SEQ ID NO: 20), Fig. 20A (SEQ ID NO: 25), or Fig. 20B (SEQ ID NO: 26).

122. (New) An isolated protein comprising a CF or CFI form of the amino acid sequence set forth in any one of Figs. 39A-127A (SEQ ID NO: 65, 66, 68, 69, 73, 74, 77, 78, 81, 82, 85, 86, 89, 90, 93, 94, 97, 98, 101, 102, 105, 106, 109, 110, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 217, 220, 222, 223, 226, 228, 230, 232, 233, 236, 237, 240, 241, 244, 245, 248, 249, 252, 253, 256, 257, 260).

123. (New) A nucleic acid comprising the nucleotide sequence set forth in any one of Figs. 39B-62B (SEQ ID NO: 72, 67, 70, 71, 75, 76, 79, 80, 83, 84, 87, 88, 91, 92, 95, 96, 99, 100, 103, 104, 107, 108, 111, 112), Figs. 63B-84B (SEQ ID NO: 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 151, 153, 155, 157, 159, 161, 163), Fig. 65D (SEQ ID NO: 120), Fig. 67D (SEQ ID NO: 126), Fig. 68D (SEQ ID NO: 130), Figs. 85B-106B (SEQ ID NO: 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213), Fig. 88D (SEQ ID NO: 173), Fig. 90D (SEQ ID NO: 179), Fig. 92D (SEQ ID NO: 185), Figs. 107B-127B (SEQ ID NO: 215, 218, 219, 221, 224, 225, 227, 229, 231, 234, 235, 238, 239, 242, 243, 246,

247,250,251,254,255,258,259,261), Fig. 109D (SEQ ID NO: 221),
Fig. 111D (SEQ ID NO: 227) and Fig. 112D (SEQ ID NO: 231).

124. (New) A vector comprising the nucleic acid according to any one of claims 117, 120 and 123.

125. (New) A composition comprising at least one protein or nucleic acid according to any one of claims 116, 117, 120, 122 and 123 and a carrier.

126. (New) A method of inducing an immune response in a mammal comprising administering to said mammal an amount of at least one protein and/or nucleic acid according to any one of claims 116, 117, 120, 122 and 123 sufficient to effect said induction.

127. (New) A nucleic acid comprising a codon-optimized nucleotide sequence that encodes the protein encoded by the nucleic acid sequence of Fig. 29C (SEQ ID NO:37).

128. (New) A vector comprising the nucleic acid according to claim 127.

129. (New) A composition comprising the nucleic acid according to claim 127 and a carrier.

130. (New) A method of inducing an immune response in a mammal comprising administering to said mammal an amount of the nucleic acid according to claim 127 sufficient to effect said induction.

131. (New) A nucleic acid comprising the nucleotide sequence set forth in Fig. 29C (SEQ ID NO:37).

132. (New) A vector comprising the nucleic acid according to claim 131.

133. (New) A composition comprising the nucleic acid according to claim 131 and a carrier.

134. (New) A method of inducing an immune response in a mammal comprising administering to said mammal an amount of the nucleic acid according to claim 131 sufficient to effect said induction.